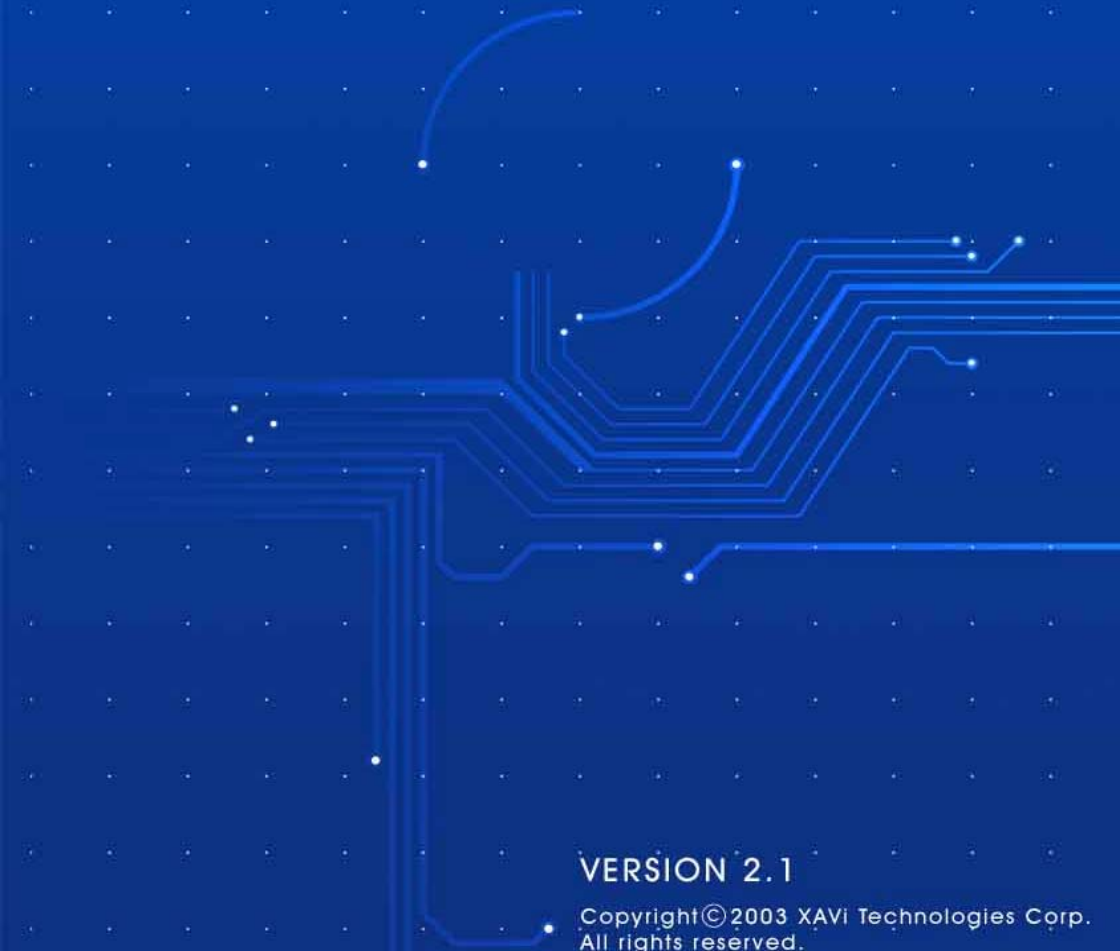
USER MANUAL

X3208a

SHDSL DSU over ATM
1 V.35/X. 21 port & 1 Ethernet port



VERSION 2.1

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XAVi Technologies Corporation
Tel: +886-2-2995-7953
9F, No. 129, Hsing Te Road, Sanchung City,
Taipei Hsien 241,
Taiwan (R.O.C.)

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Table of Contents

Chapter 1 – Getting Started

I. Overview……6
II. Features……7
III. Relevant Protocol Information……7
IV. Packaging……8
V. Safety Guidelines……9
VI. Appearance……10
Front Panel……10
Rear Panel……11
VII. Application……12
VIII. Hardware Installation…… 14
IX. Management…… 15
X. Default Values……16
XI. Software Upgrade…… 18

Chapter 2 – Command Line Interface

I. Console Setup……17
II. Command Tree Structure……18
A. Main Menu Command List…… 20
B. Data Menu Command List……20
C. FRN Menu Command List…… 21
D. FRS Menu Command List……22
E. LAN Menu Command List…… 22
F. Manage Menu Command List…… 22
G. R1483 Menu Command List…… 23
H. SHDSL Menu Command List…… 23
III. CLI Commands…… 24
A. Main Menu Commands……26
B. Data Menu Commands…… 31
C. FRN Menu Commands…… 39
D. FRS Menu Commands…… 41
E. LAN Menu Commands…… 42
F. Manage Menu Commands…… 44
G. R1483 Menu Commands…… 46
H. SHDSL Menu Commands…… 48

Table of Contents

Appendix A – Connector Pin Assignments.....52

Appendix B – Specifications
B1. Hardware Specifications.....56
B2. Software Specifications.....57

Appendix C– Warranties
C1. Product Warranty.....58
C2. Warranty Repair.....58
C3. Out-of-Warranty Repair. 59

Appendix D – Regulations
D1. FCC Part 15 Notice.....60
D2. IC CS-03 Notice.....62

Contact Information..... 62

Revision Marks

Revision	Date	Notes
V 1.0	November 16, 2002	Software: Version: N/A
V 2.0	June 11, 2003	Software Version: N/A
V 2.1	June 19, 2003	Software Version: 1.00XAF2.J8I-H08.1004-FR1.7-2.74B 22/Nov/2002 11:30

Chapter 1

Getting Started

I. Overview

Based on the ITU-T G.991.2 G.SHDSL standard, ***X3208a*** Single-pair High-speed Digital Subscriber Line (SHDSL) product series provides a Frame Relay and ATM interworking transport infrastructure for Public Network WAN access, high-speed Internet access, LAN-to-LAN connectivity, and other high-speed data access applications. It is ideal for Network Service Providers who wish to deliver high-speed data transmissions to their customers. The WAN interface provides programmable symmetrical rate from 72Kbps to 2312Kbps by adapting to the DSU application. The SHDSL interface of ***X3208a*** can be configured to interoperate with SHDSL DSLAM or to fit Point-to-Point data transmission applications by flexible COE/CPE configurations. The Data interface of ***X3208a*** can be configured to connect with existing Frame Relay routers.

Note: Two Implementation Agreements (IAs) in Frame Relay forum have been developed specifically for current frame relay users: Network Interworking (FRF.5) and Service Interworking (FRF.8). Both solutions protect current investments in frame relay while providing a migration path to ATM.

II. Features

- ✓ High Speed Symmetrical Data Transmission on a Single Twisted Copper Pair Wire.
- ✓ SHDSL Line Code: PAM
- ✓ Data port with multi-protocol support V.35/RS530, X.21.
- ✓ Provides FRF.5 Frame Relay/ATM Network Interworking function.
- ✓ Provides FRF.8 Frame Relay/ATM PVC Service Interworking function.
- ✓ Nx64Kbps rate configurable to prolong the loop reach.
- ✓ High performance, simple operation, low power consumption.
- ✓ Compatible and interoperable with major Central Office side symmetric DSL DSLAM.
- ✓ Local OAM&P via RS-232 Craft port or by telnet through auto-negotiation of 10/100BaseT port.
- ✓ Provides loop-back function for easy maintenance.

III. Relevant Protocol Information

- ✓ FRF.5, Frame Relay/ATM PVC Network Interworking Implementation Agreement
- ✓ FRF.8.1, Frame Relay/ATM PVC Service Interworking Implementation Agreement
- ✓ RFC 1483, Multi-protocol Encapsulation over AAL 5 (July 1993)
- ✓ RFC 1490, Multi-protocol Encapsulation over Frame Relay
- ✓ Rec. Q.933, Layer 3 Signaling Specification for Frame Mode Bearer Services
- ✓ af-uni-0010.002, ATM User-Network Interface (UNI), v3.1

IV. Packaging

This package consists of the following items:

X3208a SHDSL Router

RJ-11 Cable

RJ-45 Cable

RS-530 to V.35 Cable
RS-530 to X.21 Cable (Optional)

AC Adapter

User's Manual CD-ROM

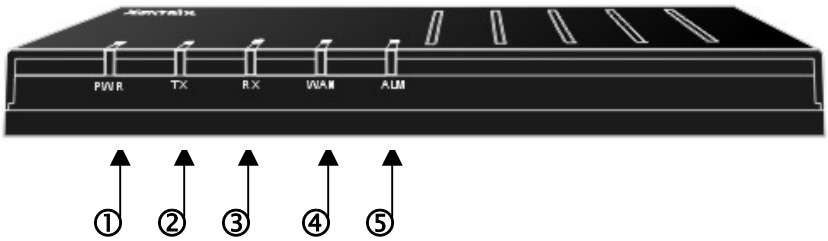
V. Safety Guidelines

In order to reduce the risk of fire, electric shock and injury, please adhere to the following safety guidelines.

- ✓ Carefully follow the instructions in this manual; also follow all instruction labels on this device.
- ✓ Except for the power adapter supplied, this device should not be connected to any other adapters.
- ✓ Do not spill liquid of any kind on this device.
- ✓ Do not place the unit on an unstable stand or table. This unit may drop and become damaged.
- ✓ Do not expose this unit to direct sunlight.
- ✓ Do not place any hot devices close to this unit, as it may degrade or cause damage to it.
- ✓ Do not place any heavy objects on top of this unit.
- ✓ Do not use liquid cleaners or aerosol cleaners. Use a soft dry cloth for cleaning.

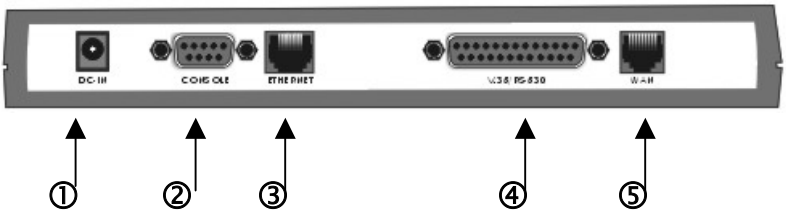
VI. Appearance

Front Panel



	Label	Status	Color	Description
①	PWR	ON	Green	Power supply is connected properly.
②	TX	ON	Green	Frame sync over multi-protocol.
		Blinking	Green	Transmitting data over multi-protocol.
		ON	Red	Loss of signal alignment.
③	RX	ON	Green	Frame sync over multi-protocol.
		Blinking	Green	Receiving data over multi-protocol.
		ON	Red	Loss of signal alignment.
④	WAN	Blinking	Green	Training with DSLAM.
		ON	Green	SHDSL link is ready.
⑤	ALM	Blinking	Red	Booting up.
		ON	Red	Error.

Rear Panel

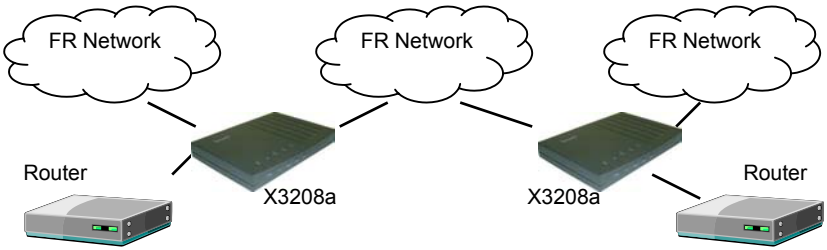


	Label	Description
①	PWR	DC-inlet for AC Adapter.
②	CONSOLE	Serial port; connect to an ASCII data terminal.
③	ETHERNET	RJ-45 port; connect to a PC or LAN.
④	V.35/RS-530	DB-25 port; connect to a multi-protocol router.
⑤	WAN	RJ-11 port; connect to the SHDSL outlet.

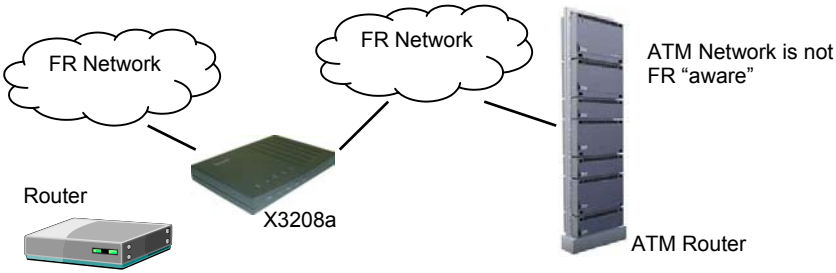
VII. Application

The most common applications for SHDSL DSU are used for lease line high-speed data transmission.

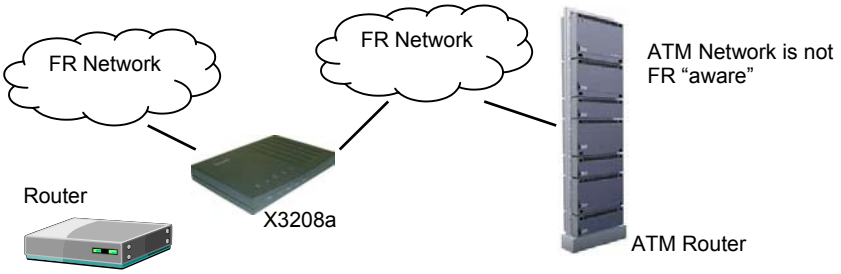
Network Interworking – Scenario 1



Network Interworking – Scenario 2

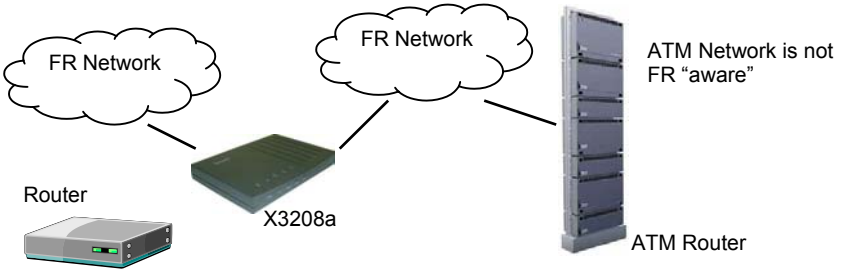


Service Interworking – Transparent Mode



Transparent Payload Transport (No Protocol Processing)
ATM AAL5-CPCS (FR Headers NOT Preserved)

Service Interworking – Translation Mode



RFC 1490/FR -- Translate Encapsulation -- RFC 1483/ATM
ATM AAL5-CPCS (FR Headers NOT Preserved)

Applications:

1. Lease line high-speed data transmission with Public Network.
2. Point-to-point high-speed data transmission for campus or other applications.

VIII. Hardware Installation

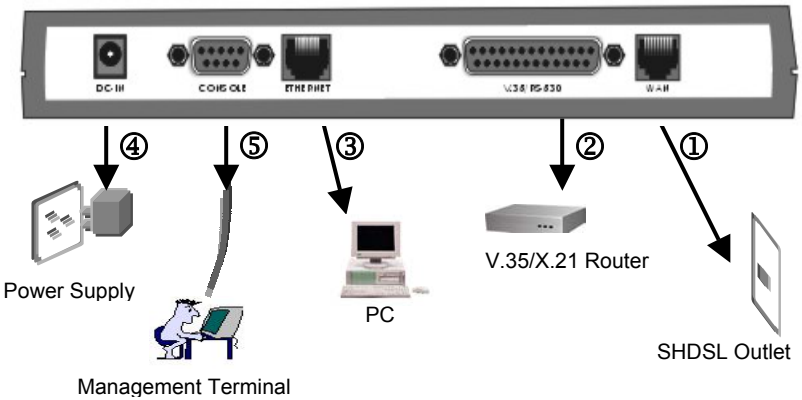
1. Connect one end of the RJ-11 cable into the WAN port of ***X3208a***, and the other end into the SHDSL wall outlet.

2. Connect one end of the V.35/X.21 cable to connect to ***X3208a*** and the other end to a V.35/X.21 router.

3. Connect one end of the RJ-45 cable into one of the RJ-45 ports of ***X3208a***, and the other end into your PC or LAN.

4. Plug in the AC adapter into the AC power socket, and connect the DC jack into the PWR inlet of ***X3208a***.

5. Use a 9-pin RS-232 cable to connect the Console cable to the RJ-45 cable then to a PC with data terminal emulation software (Hyper Terminal) installed, in order for local management.



IX. Management

- ✓ **Console Port** – use the RS-232 cable for connecting ***X3208a*** to a console terminal or a PC running a terminal emulation program, such as Hyper Terminal. *(For further details, See Chapter 2: Command Line Interface)*
- ✓ **Local Ethernet Port (Telnet)** – connect the Ethernet port to your local area network or directly to a PC, "telnet" ***X3208a*** from any workstation in the LAN. The default local Ethernet IP address is "192.168.1.1".

Note: As operating an SHDSL device requires technical know-how and experience. It is recommended that only qualified technical staffs manage ***X3208a***. Therefore, a password authentication is required when you enter the command line and web interface. See the *Default Values* section to obtain the password.

X. Default Values

X3208a is pre-configured with the following parameters; you may also re-load the default parameters by typing **Default** in the command line interface. *(For further details, See Chapter 2: Command Line Interface)*

Password: 0000

Multi-protocol Setting
Interface: V.35
Terminal: DCE
Clock source: Internal

txdatainv -- normal
txclkinv – normal
rxdatainv – normal
rxclkinv -- normal
rts -- enable
dtr -- enable
cts -- enable
dsr --enable
dcd --enable
(Local) loopback: disable
Rate -- 2048Kbps

SHDSL
Terminal: CPE (RT) side
Rate Mode: Adaptive
Line Rate Range:
Max: 2056Kbps
Min: 72Kbps
Framer Type: Utopia
SHDSL Standard: annex B

Frame Relay Setting

FR management	- 0.no maintenance
FRF.12 segment	- 0
Autostart	- false
N391 protocol	- 6
User N392	- 3
Network N392	- 3
User N393	- 4
Network N393	- 4
T391 timer	- 10
T392 timer	- 16

Frame Relay Service Interworking

FUNCTION	VPI/VCI	CLASS	LLC/VCMUX	Spanning
Frs	*8/36	ubr	LLC	Disable

Pkt Filter	DLCI	Trans	DE	FECN	clpi	mux	hdr	dc
ANY	100	1	2	2				

Remote Management

FUNCTION	VPI/VCI	CLASS	LLC/VCMUX	Spanning
Rfc 1483	*8/35	ubr	LLC	Disable

Pkt Filter	DLCI	Trans	DE	FECN	clpi	mux	hdr	dc
ANY								

XI. Software Upgrade

You may easily upgrade ***X3208a*** embedded software by obtaining the compressed upgrade kit from the service provider then following the steps:

- ✓ Extract the ZIP file for updated firmware
- ✓ Connect ***X3208a*** via the local Ethernet port or remote ADSL link, make sure that ***X3208a*** Ethernet IP address and your terminal are properly configured so that you can successfully "*ping*" ***X3208a***. The default local IP address is 192.168.1.1.
- ✓ Under the DOS prompt, execute the command "xupgrade <*IP address of* ***X3208a*** >", for instance "xupgrade 192.168.1.1".
- ✓ This upgrading process may last as long as 60 seconds.
- ✓ Then reboot ***X3208a*** with new software.

Note: Strictly maintain stable power to ***X3208a*** while upgrading its software. If the power fails during the upgrading process, contents in the memory could be destroyed, and the system may hang. In such as case, you must call the dealer or system integrator for repairs.

Chapter 2

Command Line Interface

I. Console Setup

Connect the RS-232 console port to an ASCII data terminal or a PC with Widows serial Terminal mode of VT-100 (Hyper Terminal). To Start the Hyper-terminal, follow the steps below.

1. Start "Hyper-terminal" program

On Windows 98 or Windows NT:

Click on the **Start** button → **Programs** → **Accessories** → **Hyper Terminal Group** → Double Click **"Hypertrm.exe"** → Enter Connection Name → Select Icon → Click **OK**

2. Select a COM port to communicate with *X3208a*

Choose direct to COM1 or COM2 and click on **OK**

3. Set Port Properties

- **Port Setting:**
  Bit per second: 9600
  Data bits: 8
  Stop bits: 1
  Parity bits: None
  Flow Control: None
- **Settings:**
  Function, arrow, and ctrl keys act as: Windows keys
  Emulation: Auto-detect
  Back-scroll buffer lines: 500
  ASCII Setup:
  Echo typed characters locally
  Line delay: 0 milliseconds
  Character line feeds incoming line ends: enable

II. Command Tree Structure

A. Main Menu Command List

Command	Description
data	Entry to Frame Relay and Multiprotocol menu
default	Set all configuration to factory setting
frn	Entry to Frame Relay and ATM Network Interworking menu (FRF.5)
frs	Entry to Frame Relay and ATM Service Interworking menu(FRF.8)
lan	Entry to Ethernet menu
list	List status for enabled PVC
manage	Entry to management menu
ping	Ping IP for testing purpose
quick	Quick setup
r1483	Entry to RFC1483 menu
restart	Reboot modem
save	Save and restart modem
shdsl	Entry to SHDSL menu
show	Display configuration of PVC and Ethernet
ver	Display software version

B. DATA Menu Command List

Command	Description
version	Display Frame Relay and Multiprotocol module version
default	Setting all data configuration back to factory setting
Status	Display the configuration and status of current Frame Relay and Multiprotocol setting
enable	Activate the last updated Frame Relay and Multiprotocol parameters
interface	Configure Multiprotocol interface mode

terminal	Configure Multiprotocol terminal mode
clock	Set multi-protocol Clock source
rate	Set internal clock rate
cts	Set Multiprotocol Clear to send
dsr	Set Multiprotocol Data set ready
dcd	Set Multiprotocol DataCarrierDetect
rts	Set Multiprotocol Request To Send
dtr	Set Multiprotocol Data Terminal Ready
rxclkinv	Set Multiprotocol Rx Clock Invert
rxdatainv	Set Multiprotocol Rx Data Invert
txclkinv	Set Multiprotocol Tx Clock Invert
txdatainv	Set Multiprotocol Tx Data Invert
loopback	Set Multiprotocol loopback
ll	Set Multiprotocol Local Loopback
frmtype	Set Frame Relay Management protocol type
autostart	Set Frame Relay port automatically start
t391	Set Frame Relay T391 timer value
t392	Set Frame Relay T392 timer value
n391	Set Frame Relay N391 protocol value
un392	Set Frame Relay User side N392 protocol value
nn392	Set Frame Relay Network side N392 protocol value
un393	Set Frame Relay User side N393 protocol value
nn393	Set Frame Relay Network side N393 protocol value
segsize	Set FRF.12 segment size

C. FRN Menu Command List

Command	Description
delpvc	Delete VPI and VCI
setclpi	Set ATM to Frame Relay CLPI mapping

setdc	Set DC field value in Frame Relay DLCI header
setde	Set Frame Relay to ATM DE mapping
sethdr	Set Frame Relay header type
setpvc	Set FRF.5 VPI/VCI and DLCI(numbers<=10)
show	Show all VPI/VCI channel configuration

D. FRS Menu Command List

Command	Description
delpvc	Delete VPI and VCI
setde	Set DE and CLPI mapping
setfecn	Set FECN and EFCI mapping
setpvc	Set FRF.8 VPI/VCI and DLCI (numbers<=2)
settrans	Set Translation or Transparent Mode
show	Show all VPI/VCI channel configuration

E. LAN Menu Command List

Command	Description
fullduplex	Full duplex and half duplex
setip	Setup the IP address, and subnet mask for Ethernet connection
show	Show LAN configuration

F. MANAGE Menu Command List

Command	Description
setpass	Change password

G. R1483 Menu Command List

Command	Description
delpvc	Delete VPI and VCI
pfilter	Set packet filter type
setpvc	Set VPI and VCI for bridge mode
setqos	Set class
setspan	<Enable>|<Disable> spanning tree
show	Show RFC1483 configuration

H. SHDSL Menu Command List

Command	Description
adapt	set adaptive mode
default	set SHDSL configuration back to factory setting
enable	activate the last updated SHDSL parameters
fix	set fixed mode
margin	set gd2237 Margin (useable on adaptive)
status	display the configuration and status of SHDSL setting
terminal	configure modem to COE or CPE mode

III. CLI Commands

The command line interface allows you to change SHDSL and Ethernet parameters, and display the status. Some commands must be followed by parameters for proper configuration to the device, conventionally there shall be a "space" between a command and its corresponding parameters.

The punctuation marks in command line interface have their different meanings, in the syntax **< >** means that the enclosed parameters are compulsory; **[ ]** means the enclosed parameters are optional, and **|** between the parameters means either….or. In the parameters section **" "** means the enclosed parameters are Key Words. Furthermore, after entering the password, screen will show the prompt, such as **>>**, for entering the commands.

The next few sections describe the commands along with examples.

HELP or ?

Lists all commands at the current level and follow by simple description of each command.

Syntax:	help
Parameters:	
Example:	>>help

Syntax:	?
Parameters:	
Example:	>> ?

HELP <command> or ? <command>

Display the usage of particular command in each level.

Syntax:	help <command>
Parameters:	command: Enter each command
Example:	> lan> help setip
	Display the syntax of setip command
Response:	setip - setip <etherip[/<masknum>] [subnet mask]>

Syntax:	? <command>
Parameters:	command: Enter each command
Example:	>lan> ? setip
Response:	Display the syntax of setip command
	Setip - setip <etherip[/<masknum>] [subnet mask]>

HOME

Go back to the upper level.

Syntax:	Home
Parameters:	
Example:	>> home

Note 1: The connection will time out after 3 minutes if there is no access to device. You must re-enter the password to resume the connection.

Note 2: All settings will take effect only after they have been saved.

A. Main Menu Commands

DATA

Enter to DATA configuration menu. Refer to DATA Menu Commands for more details.

Syntax:	Data
Parameters:	
Example:	>> data

Default

Set all configurations to factory setting.

Syntax:	default
Parameters:	
Example:	>> default

FRN

Enter to the Frame Relay and ATM Network Interworking menu (FRF.5). Refer to FRN Menu Commands for more details.

Syntax:	frn
Parameters:	
Example:	>> frn

FRS

Enter to the Frame Relay and ATM Service Interworking menu (FRF.8). Refer to FRS Menu Commands for more details.

Syntax:	frs
Parameters:	
Example:	>> frs

LAN

Enter to LAN menu. Refer to LAN Menu Commands for more details.

Syntax:	lan
Parameters:	

Example: >> lan

MANAGE

Enter to MANAGE configuration menu. Refer to MANAGE Menu Commands for more details.

Syntax:	Manage
Parameters:	

Example: >>manage

PING

Ping a specific IP address for testing purpose.

Syntax:	ping <ipaddress>
Parameters:	ipaddress: IP address, in the format of 4 decimals separated by dots

Example1:	>> ping xxx.xxx.xxx.xxx
Response:	>>Press 'ESC' to break
	>> ip: ping - reply received from xxx.xxx.xxx.xxx
Explanation:	Successful ping
Example2:	>> ping 192.168.1.1
Response:	>> Invalid IP
Explanation:	Invalid IP address
Example3:	> >ping xxx.xxx.xxx.xxx
Response:	>>Press 'ESC' to break
	>>ip: ping – no reply received
Explanation:	Wrong IP address

QUICK

Enter a VC with RFC1483/bridge mode by an interactive user interface.

Syntax:	quick
Parameters:	
Example:	> quick
Response:	1 PVC existed, 7 PVCs available.

VPI(0-4095): 2[Enter]

VCI(1-65535): 34[Enter]

PCR(0-800):640[Enter]

Packet Filter (Any/Ip/Pppoe): a[Enter]

Add another PVC ? (y/n):n[Enter]

Enable Spanning tree? (y/n) : y[Enter]

Configuration

MODE: Bridge

FUNCTION: R1483

Spanning Tree: Enabled

#	VPI	VCI	PCR	Packet Filter
1:	2	34	640	ANY

Preserve the configuration (y/n): y[Enter]

Configuration will have no effect until after save and restart.

R1483

Enter to R1483 menu. Refer to R1483 Menu Commands for more details.

Syntax:	r1483
Parameters:	
Example:	> r1483

RESTART

Reboot the SHDSL DSU.

Syntax:	restart
Parameters:	
Example:	> restart
Response:	SDRAM size = 0x800000
	Booting
	System start
	Password:

SAVE

Save the configuration into flash memory, and restart DSU.

Syntax:	save
Parameters:	
Example:	> save
Response:	Saving configuration… Configuration saved.
	Updating flash file system…
	SDRAM size=0*800000
	Done
	Booting…
	System start…
	Password:
	Save the configuration and then restart DSU.

SHDSL

Enter to SHDSL configuration menu. Refer to SHDSL Menu Commands for more details.

Syntax:	shdsl
Parameters:	
Example:	> shdsl

VER

Display software version.

Syntax:	ver
Parameters:	
Example:	>ver
Response:	Version: 1.00XAF2.J8I-H08.1004-FR1.7-2.74B 22/Nov/2002 11:30

B. DATA Menu Commands

VERSION

Display Frame Relay and Multiprotocol module version.

Syntax:	version
Parameters:	
Example:	>data>version
Response:	Version: 1.01(FRIW)

DEFAULT

Set all data configuration back to factory setting.

Syntax:	default
Parameters:	
Example:	>data> default
Response:	The data set to default successfully.

STATUS

Display the configuration and status of current Frame Relay and Multi-protocol setting.

Syntax:	status
Parameters:	
Example:	> data> status
Response:	Frame Relay :
	FR management - 0.no maintenance
	FRF.12 segment - 0
	Autostart - false
	N391 protocol - 6
	User N392 - 3
	Network N392 - 3
	User N393 - 4

Network N393 - 4
T391 timer - 10
T392 timer - 16
Config:
interface - v35
terminal - dce
ll - disable
rts - enable
dtr - enable
cts - disable
dsr - disable
dcd - disable
loopback - disable
clock - internal
txdatainv - normal
txclkinv - normal
rxdatainv - normal
rxclkinv - normal
rate - 2048

Status:
interface - v35
terminal - dce
ll - disable
rts - disable
dtr - disable
cts - enable
dsr - enable
Explanation: dcd - enable
loopback - disable

clock - internal
txdatainv - normal
txclkinv - normal
rxdatainv - normal
rxclkinv - normal
rate - 2048

ENABLE

Activate the last updated multi-protocol parameters without saving and restarting system.

Syntax:	Enable
Parameters:	

Example: >data> enable

INTERFACE

Configure multi-protocol interface mode.

Syntax:	interface <eia530>|<x21>|<v35>
Parameters:	

Example: >data> interface v35

TERMINAL

Configure Multi-protocol terminal mode.

Syntax:	terminal <dce>|<dte>
Parameters:	

Example: >data> terminal dce

CLOCK

Configure determines the direction and source of the transmit clock.

Syntax:	clock < internal >|<external>
Parameters:	"internal": Internal Clock
	"external": external Clock
Example:	>data> clock internal

RATE

Set the internal clock rate.

Syntax:	rate <rate>
Parameters:	64 to 2048: decimal value of rate (Kbps). Please refer the rate setting below:
Example:	>shdsl> rate 2048
	Set multipotocol data rate to 2048Kbps.

CTS

Set Multi-protocol clear to send.

Syntax:	cts<enable>|<disable>
Parameters:	"enable": enable cts
	"disable": disable cts
Example:	>data> cts enable

DSR

Set Multiprotocol Data Set Ready.

Syntax:	Dsr<enable>|<disable>
Parameters:	"enable": enable dsr
	"disable": disable dsr
Example:	>data> dsr enable

DCD

Set Multi-protocol data carrier detect.

Syntax:	dcd<enable>|<disable>
Parameters:	"enable": enable dcd
	"disable": disable dcd
Example:	>data> dcd enable

RTS

Set Multi-protocol Request To Send

Syntax:	Rts<enable>|<disable>
Parameters:	"enable": enable rts
	"disable": disable rts
Example:	>data> rts enable

DTR

Set Multi-protocol Data Terminal Ready.

Syntax:	Dtr<enable>|<disable>
Parameters:	"enable": enable dtr
	"disable": disable dtr
Example:	>data> dtr enable

RXCLKINV

Configure determines the Rx clock normal or invert from multi-protocol.

Syntax:	rxclkinv < invert>|<normal>
Parameters:	"normal": Rx clock normal
	"invert": Rx clock invert
Example:	>data> rxclkinv normal

RXDATAINV

Configure determines the Rx data normal or invert from multi-protocol.

Syntax:	rxdatainv < invert>|<normal>
Parameters:	"normal": Rx data normal
	"invert": Rx data invert
Example:	>data> rxdatainv normal

TXCLKINV

Configure determines the TX clock normal or invert from multi-protocol.

Syntax:	txclkinv < invert>|<normal>
Parameters:	"normal": Tx clock normal
	"invert": Tx clock invert
Example:	>data> txclkinv normal

TXDATAINV

Configure determines the TX data normal or invert from multi-protocol.

Syntax:	txdatainv < invert>|<normal>
Parameters:	"normal": Tx data normal
	"invert": Tx data invert
Example:	>data> txdatainv normal

LOOPBACK

This command is used to verify if the SHDSL interface data path works normally and in the same time the data port also been set to loopback mode such that external tester can verify if the data port works normally.

Syntax:	loopback<enable>|<disable>
Parameters:	"enable": enable loopback
	"disable": disable loopback
Example:	>data>loopback enable

LL

This command is used to set the multi-protocol data port to loopback mode.

Syntax:	ll<enable>|<disable>
Parameters:	"enable": enable
	"disable": disable
Example:	>data> ll enable

FRMTYPE

Set Frame Relay Management protocol type.

Syntax:	frmtype <num>
Parameters:	Num: <0.no_maintenance>|<1.933A_Network>|<2.933A_User>|<3.933A_Both>|<4.617D_Network>|<5.617D_User>|<6.617D_Both>|<7.LMI_Network>|<8.LMI_User>|<9.LMI_Both>
Example:	>data> frmtype 0

AUTOSTART

Set Frame Relay port to automatically start.

Syntax:	autostart <true>|<false>
Parameters:	"true": enable
	"false": disable
Example:	>data> autostart enable

t391; t392

Set Frame Relay T391/T392 timer value.

Syntax:	t391 <1>|~|<65535>; t392 <1>|~|<65535>
Parameters:	
Example:	>data>t391 10

n391/ un392/ nn392/ un393/ nn393

Set Frame Relay N391/ User side N392/ Network side N392/ User side N393/ Network side N393 protocol value.

Syntax:	t391 <1>|~|<65535>; t392 <1>|~|<65535>
Parameters:	
Example:	>data>t391 10

SEGSIZE

Set FRF.12 segment size.

Syntax:	segsize <0>|~|<65535>, which 0 disable FRF.12 segmentation
Parameters:	
Example:	>data>segsize 0

DEFAULT

Set all configurations to factory setting.

Syntax:	Default
Parameters:	
Example:	> default

C. FRN Menu Commands

DELPVC

Delete VPI and VCI.

Syntax:	delpvc <all>|[<vpi>/]<vci>
Parameters:	
Example:	>frn>delpvc all

SETCLPI

Set ATM to Frame Relay CLPI mapping.

Syntax:	setclpi [<vpi>/]<vci> [clpi]
Parameters:	which clpi=0 set according to FR SSCS only clpi=1 use both FR SSCS and ATM layer indications
Example:	>frn>setclpi 8/35 0

SETDC

Set DC field value in Frame Relay DLCI header.

Syntax:	setdc [<vpi>/]<vci> [dc]
Parameters:	dc=0~1
Example:	>frn>setdc 8/35 0

SETDE

Set Frame Relay to ATM DE mapping.

Syntax:	setde [<vpi>/]<vci> [de]
Parameters:	which de=0 map DE and always set CLPI to 0
	de=1 map DE and always set CLPI to 1
Example:	>frn>setde 8/35 0

SETHDR

Set Frame Relay to ATM DE mapping.

Syntax:	sethdr [<vpi>/]<vci> [header type]
Parameters:	which header type=2~4 bytes
Example:	>frn>sethdr 8/35 2

SETPVC

Set FRF.5 VPI/VCI and DLCI (numbers<=10).

Syntax:	setpvc [<vpi>/]<vci> [dlci] [llc/vcmux]
Parameters:	which vpi=0~4095, vci=1~65535 and dlci=1~1023
Example:	>frn>setpvc 8/35 171

SHOW

Show all VPI/VCI channel configuration.

Syntax:	show
Parameters:	
Example:	>frn>show

D. FRS Menu Commands

DELPVC

Delete VPI and VCI.

Syntax:	delpvc <all>|[<vpi>/]<vci>
Parameters:	
Example:	>frs>delpvc all

SETDE

Set DE and CLPI mapping.

Syntax:	setde [<vpi>/]<vci> [de]
Parameters:	which de=0 always set 0 to CLPI
	de=1 always set 1 to CLPI
	de=2 convert from DE to CLPI
Example:	>frs>setde 8/35 0

SETFECN

Set FECN and EFCI mapping.

Syntax:	setfecn [<vpi>/]<vci> [fecn]
Parameters:	which fecn=0 always set 0 to FECN
	fecn=1 always set 1 to FECN
	fecn=2 convert from EFCI to FECN
Example:	>frs>setfecn 8/35 0

SETPVC

Set FRF.8 VPI/VCI and DLCI (numbers<=2).

Syntax:	setpvc [<vpi>/]<vci> [dlci] [llc/vcmux]
Parameters:	which vpi=0~4095, vci=1~65535 and dlci=1~1023
Example:	>frs>setpvc 8/35 171

SETTRANS

Set Translation or Transparent Mode.

Syntax:	settrans [<vpi>/]<vci> [translation]
Parameters:	which translation=0 is running Transparent Mode
	translation=1 is running Translation Mode
Example:	>frs>settrans 8/35 0

SHOW

Show all VPI/VCI channel configuration.

Syntax:	show
Parameters:	
Example:	>frs>show

E. LAN Menu Commands

FULLDUPLEX

Set full duplex or half duplex.

Syntax:	fullduplex <Disable>|<Enable>
Parameters:	Disable: halfduplex
	Enable: fullduplex
Example:	> lan> fullduplex enable

SETIP

Setup the IP address, and subnet mask for the Ethernet LAN connection.

Syntax:	setip <etherip[/<masknum>]>[subnet mask]
Parameters:	etherip: Ethernet IP address, in the format of 4 decimals separated by dot
	subnet mask: Subnet mask, the default is 255.255.255.0
Example:	> lan> setip 192.168.2.32

SHOW

Display the current configuration of Ethernet.

Syntax:	show
Parameters:	
Example:	> lan> show

LIST

List status for enabled PVC.

Syntax:	list
Parameters:	
Example:	lan> list
Response:	Port ethernet1 0: edd TxPkts: 1/0 RxPkts: 0/0 Port hdlc has no open channels Port shdsl 0: bridge TxPkts: 1/0 RxPkts: 0/0 TxVPI/VCI: 8/35 RxVPI/VCI: 8/35 1: oam TxPkts: 0/0 RxPkts: 0/0 TxVPI/VCI: 0/0 RxVPI/VCI: 0/0 2: oam TxPkts: 0/0 RxPkts: 0/0 TxVPI/VCI: 0/0 RxVPI/VCI: 0/0 3: oam TxPkts: 0/0 RxPkts: 0/0 TxVPI/VCI: 0/0 RxVPI/VCI: 0/3 4: oam TxPkts: 0/0 RxPkts: 0/0 TxVPI/VCI: 0/0 RxVPI/VCI: 0/4

F. MANAGE Menu Commands

SETPASS

Change password.

Syntax:	setpass
Parameters:	Up to 18 alphanumeric characters. Upper case and lower case are different numbers.
Example:	For enabling a new password > manage> setpass
Response:	Password disabled!! New Password: **** Confirm password again: ****

	Password has been changed.
	Saving configuration...Configuration saved.
Explanation:	You will be asked to key in new password and confirm the new password again.
Example 2:	For changing old password:
	> manage> setpass
Response:	Old Password: ****
	New Password (press ENTER to disable): ****
	Confirm password again: ****
	Password has been changed!
	Saving configuration...Configuration saved.
Explanation:	You will be asked to key in old password. Type the new password and confirm the new password again.
Example 3:	For disabling old password:
	> manage> setpass
Response:	Old Password: ********
	New Password (press ENTER to disable):
	Are you sure to disable password (y/n)?
	Password has been disabled!
	Saving configuration...Configuration saved.
Explanation:	You will be asked to key in old password and press enter to disable old password and confirm it again.

G. R1483 Menu Commands

DELPVC

Disable a VC by giving a VPI and VCI numbers.

Syntax:	delpvc <all>|[<vpi>/]<vci>
Parameters:	"all": disable all VCs
	vpi: decimal value of VPI number, 0 to 4095
	decimal value of VCI number, 1 to 65535
Example:	>r1483> delpvc 1/32
	Disable VC=1/32 in configuration setting

PFILTER

Packet filtering control on a specific VC.

Syntax:	pfilter [<vpi>/]<vci> <any|ip|pppoe>
Parameters:	vpi: decimal value of VPI number, 0 to 4095. Defined by setpvc command previously
	vci: decimal value of VCI number,1to 65535. Defined by setpvc command previously
	"any": Allow to pass both IP and PPPOE packet
	"ip": only allow to pass IP packet
	"pppoe": only allow to pass PPPoE packet
Example:	>r1483> pfilter 1/32 ip
	Allow to pass IP packet only in a specific 1/32 VC

SETPVC

Enable a VC by giving the VCI and VPI numbers.

Syntax:	setpvc [<vpi>/]<vci> [pcr <pcr>]
Parameters:	vpi: decimal value of VPI number, 0 to 1023
	vci: decimal value of VCI number, 1 to 65535
	pcr: Peak Cell Rate, 0 to 800 cells per second, the default is 800 cells per second

Example: >r1483> setpvc 1/32 pcr 600

Configure vpi=1, vci= 32, pcr=600

SETQOS

Configure each enabled IPoA VC the Quality of Service on ATM networks by choosing UBR, CBR or VBR, also set the speed of the ATM link in cells per second.

Syntax:	setqos [<vpi>/]<vci> <ubr|cbr|vbr(nrt)> <pcr>
Parameters:	vpi: decimal value of VPI number, 0 to 4095
	vci: decimal value of VCI number, 1 to 65535
	(vpi, vci defined by setwanip command previously)
	"ubr": Unspecified Bit Rate
	"cbr": Constant Bit Rate
	"vbr": Variable Bit Rate
	pcr: Peak Cell Rate, 0 to 800 cells per second

Example: > setqos 1/32 ubr 640

Configure 1/32 VC using UBR and 640 cells per second for the connection.

SETSPAN

Enable or disable Spanning Tree under Bridge mode for all enabled VC.

Syntax:	setspan <Enable>|<Disable>
Parameters:	"Enable": enable spanning tree
	"Disable": disable spanning tree

Example: >r1483> setspan Disable

Disable spanning tree

SHOW

Display the configuration of r1483 setting.

Syntax:	show
Parameters:	
Example:	>r1483> show
Response:	FUNCTION VPI/VCI CLASS PCR(KBits) Spanning Pkt Filter Rfc1483 8/35 ubr 640 Disable ANY
Explanation:	Information for RFC1483 setting: Function (Protocol in use)……RFC1483 VPI/VCI (Connected VC channel)……...8/35 CLASS (define QoS on the ATM network)…ubr PCR (Peak Cell Rate)…640 (cells per second) Spanning (Spanning tree setting)……disable Pkt Filter (packet control).….Any (Allow to pass both IP and PPPOE packet.)

H. SHDSL Menu Commands

ADAPT

Set adaptive mode.

Syntax:	adapt
Parameters:	
Example:	>shdsl> adapt

ANNEX

Set SHDSL standard.

Syntax:	annex < a >|<b>
Parameters:	"a": annex a "b": annex b
Example:	>shdsl> annex b

DEFAULT

Set SHDSL configuration back to factory setting.

Syntax:	default
Parameters:	

Example: >shdsl> default

ENABLE

Activate the last updated SHDSL parameters without saving and restarting system.

Syntax:	enable
Parameters:	

Example: >shdsl> enable

FIX

Set fixed mode.

Syntax:	fix
Parameters:	

Example: >shdsl> fix 2056

MARGIN

Set gd2237 Margin (useable on adaptive).

Syntax:	margin
Parameters:	

Example: >shdsl> margin 1db 1db

STATUS

Display the configuration and status of current SHDSL setting.

Syntax:	status
Parameters:	

Example: >shdsl> status

Response: Config :

terminal - cpe

Rate Mode - fixed

Line Rate - 2056

Status :

F/W Version : R1.5

Line Code : PAM(SHDSL)

SHDSL Standard: ANNEX B

Last Failed : No failure

Start Progress: PRE ACTIVATION

Attenuation : -NaNdB

Line Quality : InfinitydB

Avg Quality : InfinitydB

Receiver Gain : -InfinitydB

XMIT Power : 0.0dBm

Framer Status : LOS

Current Rate : 0

Line Status : Handshake

Framer Type : nx64

RX CLOCK : inter

RX PLL : enable

RX FRMRESYNC : yes

TERMINAL

Configure modem to COE or CPE terminal.

Syntax:	terminal <Coe>|<CPe>
Parameters:	"Coe": central office equipment
	"CPe": remote terminal
Example:	>shdsl> terminal coe
	Configure unit as central office equipment, in order for point-to-point application

SHOW

Display configuration of PVC and Ethernet.

Syntax:	show
Parameters:	
Example:	>shdsl> show

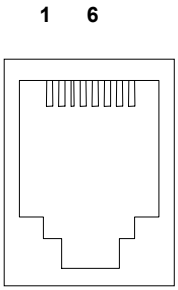
VER

Display software version.

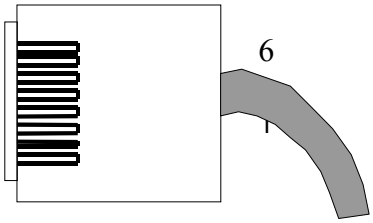
Syntax:	ver
Parameters:	
Example:	>shdsl> ver

Appendix A – Connector Pin Assignments

RJ-11 Connector for 'SHDSL Loop' – Pin 3 and 4



RJ-11 Connector on DSU Rear Panel for 'SHDSL Loop'



RJ-11 Plug for 'SHDSL Loop Cable'

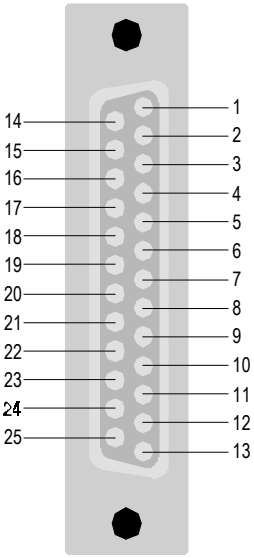
DB-25 Female Connector for 'V.35'

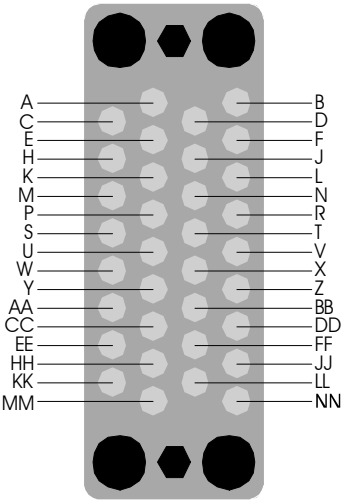
DB25 Connector Pin Number	Signal Name	Signal Direction
1	Cable Shield	
2	Transmit Data	From DTE
3	Receive Data to DTE	To DTE
4	RTS(Request to Send)	From DTE
5	CTS(Clear to Send)	To DTE
6	DSR(Data Set Ready)	To DTE
7	Signal Ground	
8	Data Carrier Detect	
9	Receive Clock Return	
10	Data Carrier Detect Return	
11	External Clock Return	
12	Transmit Clock Return	

13	Clear to Send Return	
14	Transmit Data Return	
15	Transmit Clock	To DTE
16	Receive Data Return	
17	Receive Clock	To DTE
18	Local Loopback	From DTE
19	Request to Send Return	
20	Data Terminal Ready	
21	Unassigned	
22	Data set ready Return	
23	Unassigned	
24	External Clock	From DTE
25	Test Mode	To DTE

Cables

1. RS-232 Cable for connection to VT-100 type ASCII terminal
   1.1. CRAFT Port DB-9 connector pin assignment:
      - Pin 2 ------ TXD
      - Pin 3 ------ RXD
      - Pin 5 ------ GND
   1.2. Parameter:
      - Data Speed: 9600 bps
      - Parity: None
      - Stop Bit: 1 bit
      - Data Bite: 8 Bits
      - Flow Control: None
2. RS-530 (DB25 Male) to V.35 (M34S Female) conversion cable (DCE-DTE Shielded Cable):





DB25 Connector Pin Number	Signal	M34S Connector
1	Cable Shield	A
2	Transmit Data	P
3	Receive Data to DTE	R
4	RTS(Request to Send)	C
5	CTS(Clear to Send)	D
6	DSR(Data Set Ready)	E
7	Signal Ground	B
8	Data Carrier Detect	F
9	Receive Clock Return	X
10	Data Carrier Detect Return	Unassigned
11	External Clock Return	W
12	Transmit Clock Return	AA
13	Clear to Send Return	Unassigned
14	Transmit Data Return	S

15	Transmit Clock	Y
16	Receive Data Return	T
17	Receive Clock	V
18	Local Loopback	Unassigned
19	Request to Send Return	Unassigned
20	Data Terminal Ready	H
21	Unassigned	Unassigned
22	Data set ready Return	Unassigned
23	Unassigned	Unassigned
24	External Clock	U
25	Test Mode	Unassigned

Appendix B – Specifications

B1. Hardware Specifications

- Multi-protocol Interface supports V.35/RS530, X.21
  - Connector – Female DB25 with optional converter cable for various interfaces
  - FRF.5 Frame Relay/ATM Network Inter-working function
  - FRF.8 Frame Relay/ATM PVC Service Inter-working function
  - Data rate: 64~2048 kbps
  - Timing: Internal, external
- WAN SHDSL Line Interface
  - Line Rate: 72Kbps to 2312Kbps
  - Line Code: PAM
  - Line Impedance: 135 Ω
  - Connection Loops: One Pair (2-wire)
  - Connector: RJ-11
- Indicators
  - PWR – Green LED, indicates power status
  - TX – Green/Red LED, Steady Green: data link at Multi-protocol, Flashing when transmitting data, Red when losing data link if handshaking is enabled.
  - RX – Green/Red LED, Steady Green: data link at Multi-protocol, Flashing when receiving data, Red when losing data link if handshaking is enabled.
  - WAN – Green, DSL data link. Green when synchronized. Flashing when training.
  - ALM – Red LED, DSL alarm. Red when losing sync or data error.
- Environment
  - Operation Temperature: 0°C ~ 45°C
  - Operation Humidity: 5% ~ 95%
  - Storage Temperature: -20 ~ +85°C
  - Storage Humidity: 5%~95%
- Physical Dimensions
  - (W x D x H) 220mm x 169mm x 40mm
- Power
  - AC Adapter: Input 110VAC/60Hz or 220 VAC/50Hz; Output 12VDC 1A
  - Power Consumption: Less than 10 Watts
- Certificates
  - EMC: FCC Part15 Class B, CE EN300 386
  - Safety: CB IEC60950

B2. Software Specifications

- Configuration and Network Management
  - Console VT-100 emulation
  - Interface: RS232 with DB9 connector
  - Telnet through the IEEE 802.3 Ethernet 10/100BaseT LAN port with RJ-45 connector
  - TFTP Server for software upgrade through LAN port
  - Local loop-back and Data interface loop-back

Appendix C – Warranties

C1. Product Warranty

XAVi Technologies warrants that the ADSL unit will be free from defects in material and workmanship for a period of twelve (12) months from the date of shipment.

XAVi Technologies shall incur no liability under this warranty if

- The allegedly defective goods are not returned prepaid to XAVi Technologies within thirty (30) days of the discovery of the alleged defect and in accordance with XAVi Technologies' repair procedures; or
- XAVi Technologies' tests disclose that the alleged defect is not due to defects in material or workmanship.

XAVi Technologies' liability shall be limited to either repair or replacement of the defective goods, at XAVi Technologies' option.

XAVi Technologies MARKS NO EXPRESS OR IMPLIED WARRANTIES REGARDING THE QUALITY, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE BEYOND THOSE THAT APPEAR IN THE APPLICABLE USER'S DOCUMETATION. XAVi SHALL NOT BE RESPONSIBLE FOR CONSEQUENTIAL, INCIDENTAL, OR PUNITIVE DAMAGE, INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGES TO BUSINESS OR BUSINESS RELATIONS. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES.

C2. Warranty Repair

1. During the first three (3) months of ownership, XAVi Technologies will repair or replace a defective product covered under warranty within twenty-four (24) hours of receipt of the product. During the fourth (4th) through twelfth (12th) months of ownership, XAVi Technologies will repair or replace a defective product covered under warranty within ten (10) days of receipt of the product. The warranty period for the replaced products shall be ninety (90) days or the remainder of the warranty period of the original unit, whichever is greater. XAVi Technologies will ship surface freight. Expedited freight is at customer's expense.
2. The customer must return the defective product to XAVi Technologies within fourteen (14) days after the request for replacement. If the defective product is not returned within this time period, XAVi Technologies will bill the customer for the product at list price.

C3. Out-of-Warranty Repair

XAVi Technologies will either repair or, at its option, replace a defective product not covered under warranty within ten (10) working days of its receipt. Repair charges are available from the Repair Facility upon request. The warranty on a serviced product is thirty (30) days measured from date of service. Out-of-warranty repair charges are based upon the prices in effect at the time of return.

Appendix D – Regulations

D1. FCC Part 15 Notice

Warning: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 to the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, used, and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is unlikely to cause harmful interference. But if it does, the user will be required to correct the interference at his or her own expense. The authority to operate this equipment is conditioned by the requirement that no modifications will be made to the equipment unless XAVi expressly approves the changes or modifications.

D2. IC CS-03 Notice

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements as prescribed in appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee that the equipment will operate to the user's satisfaction.

Before installing this equipment, users should make sure that it is permissible to be connected to the facilities of the local telecommunications company. An acceptable method of connection must be used to install the equipment. The customer should be aware that compliance with the above conditions might not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Warning: Users should not attempt to make such connections themselves, but should contact appropriate electric inspection authority, or electrician, as appropriate.

Contact Information

You can help us serve you better by sending us your comments and feedback. Listed below are the addresses, telephone and fax numbers of our offices. You can also visit us on the World Wide Web at www.xavi.com.tw for more information. We look forward to hearing from you!

World Headquarter
XAVi Technologies Corporation
9F, No. 129 Hsing Te Road, Sanchung City
Taipei Hsien 241, Taiwan, R.O.C
Tel: +886-2-2995-7953 Fax: +886-2-2995-7954

USA Branch Office
1463 Madera Road, N. Suite 182 Simi Valley
CA 93065, USA
Tel: +805-578-9774

Europe Branch Office
Papenreye 27, 22453 Hamburg
Germany
Tel: +49-40-589510-0 Fax: +49-40-589510-29

China Agency
Room 401, Floor 4, #608 ZhaoJiaBang Road
Shanghai, 20031
Tel: +86-21-6431-8800 Fax: +86-21-6431-7885